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| 10/604,226 | 07/02/2003 | Rajiv Doshi | 8391430 | 1225 |
| 30024 | 7590 | 03/24/2006 | EXAMINER | |
| NIXON & VANDERHYE P.C. 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203 | | | RHEE, JANE J | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1745 | |

DATE MAILED: 03/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/604,226

Applicant(s)

DOSHI, RAJIV

Examiner

Jane Rhee

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 1/17/2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) 1-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 22-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 10/6/2003
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election of claims 22-31 in the reply filed on 1-7-2006 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 22-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Satake et al. (6316138).

As to claim 22, Satake et al. discloses a solid oxide fuel cell comprising an anode, a cathode and an electrolyte, the anode and cathode arranged on opposite sides of the electrolyte, at least one of the anode and the cathode having a plurality of surface depressions formed on the exposed side thereof, extending partially through the one of the anode and cathode (col. 2 lines 8-18). As to claim 23, Satake et al. discloses that the plurality of surface depression are formed in the exposed side of the anode (col. 2 line 15). As to claim 24, Satake et al. discloses that the surface depressions comprise an array of round holes (figure 2 number 25). As to claim 25, Satake et al. discloses that the anode is substantially square (figure 2).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 26-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Satake et al. in view of Satake et al. (5480737).

Satake et al. discloses the solid oxide fuel cell described above. As to claim 26, Satake et al. fail to disclose that the anode is substantially round. It would have been an obvious matter of design choice to provide Satake et al. with an anode that is substantially round, since such a modification would have involved a mere change in shape. A change in shape is generally recognized as being within the level of ordinary skill in the art. In re Daily 149 USPQ 47.

As to claim 27, Satake et al. fail to disclose that the surface depressions have a depth of about 10-90% of the depth of the anode and in claim 29, wherein the surface depressions have a depth of about 0.23 mm.

Satake et al. '737 teaches that a maximum apparent power generation efficiency can be obtained by employing a dimple shape that satisfies $H=3.2D-.5P\pm D$ (col. 3 lines 8-9). Therefore, the height of the depression which is also equivalent to the depth of the depressions as shown in figure 2 is a result effective variable. Satake et al. '737 teaches that the equation above serves to determine the shape of the dimples that will optimize the basic performance of the fuel cell (col. 3 lines 11-13). Thus, it would have

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been obvious to one having ordinary skill in the art at the time applicant's invention was made to provide Satake et al. with the surface depressions that have a depth of about 10-90% of the depth of the anode or a depth of about 0.23mm in order to optimize the basic performance of the fuel cell in absence of unexpected results.

As to claim 28, Satake et al. fail to disclose that the anode has a thickness of about 0.3 to about 2mm. Satake et al. teaches that the anode and cathode vary in thickness, so a thick electrode provides a reduced electrical resistance and a smaller amount of material of the anode and cathode provides an improved solid oxide electrolyte fuel cell having a power generation efficiency enhanced and having a manufacturing cost reduced (col. 3 lines 15-16,25-30). Therefore, it would have been obvious to one having ordinary skill in the art at the time applicant's invention was made to provide, Satake et al. with the anode that has a thickness of about 0.3 to about 2mm in order to provide reduced electrical resistance in absence of unexpected results.

4. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Satake et al. in view of Minh (5788788).

Satake et al. discloses the solid oxide electrolyte fuel cell as described above. Satake et al. fail to disclose a ceramic tape laminated onto the electrolyte. Minh teaches an anode that is comprised of a ceramic tape laminated onto the electrolyte for the purpose of providing a very thin electrolyte laminate to reduce the internal electrical resistance of the fuel cell (col. 1 lines 60-64, col. 2 lines 6-21).

Therefore, it would have been obvious to one having ordinary skill in the art at the time applicant's invention was made to provide, Satake et al. with an anode that is

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comprised of a ceramic tape laminated onto the electrolyte in order to provide a very thin electrolyte laminate to reduce the internal electrical resistance of the fuel cell (col. 1 lines 60-64, col. 2 lines 6-21) as taught by Minh.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jane Rhee whose telephone number is 571-272-1499. The examiner can normally be reached on M-F 9-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jane Rhee
March 6, 2006



TRACY DOVE
PRIMARY EXAMINER
3/06